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ABSTRACT

TWC STUDIES CONDUCTED IN THE FIELD OF BUSINESS EDUCATION ARE PRESENTED IN THIS REPORT BY THE COLORADO STATE DEPARTMENT OF EDUCATION. IN ONE STUDY, INDIVIDUALIZED INSTRUCTION PROCEDURES AND INDIVIDUAL WCRK PACKETS WERE DEVELOPED FOR STUDENTS IN BOTH FIRST- AND SECOND-YEAR TYPING. DESCRIPTIVE STATISTICS PRESENTED FOR THE 2 GROUPS OVER A 3-YEAR PERIOD INDICATE THAT STUDENTS WHO HAD TAKEN JUNICR HIGH TYPING HAD A HIGHER AVERAGE SPEED THAN STUDENTS WHO HAD NOT. IT IS NOTED THAT SEX AND INTELLIGENCE WERE NOT RELATED TO TYPING SPEED. IN THE SECOND STUDY, THE SIMPLIFIED GREGG SHORTHAND AND THE DIAMOND JUBILEE GREGG SHORTHAND METHODS OF SHORTHAND INSTRUCTION ARE CCMPARED. THE EXPERIMENTAL GROUP STUDENTS, WHO WERE TAUGHT DIAMOND JUBILEE SHORTHAND, HAD SIGNIFICANTLY LOWER INTELLIGENCE TEST SCORES AND GRALE AVERAGES BUT HAD SIGNIFICANTLY HIGHER CUMULATIVE PERCENTAGES OF ACHIEVEMENT IN SHCRTHAND THROUGHOUT THE ENTIRE 5-MONTH TESTING PERICD. (TI)

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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COLORADO WESTERN STATES SMALL SCHOOLS PROJECT

DOCUMENTATION

[Typing and Shorthand in the Small High School]
[1965]

Self Evaluation in Typewriting in a Multiple Class Situation Providing Individualized Instruction

by Joan Fedel

An Investigation to Determine if Higher Speeds are Obtained with the Diamond Jubilee Gregg Shorthand Method

by Ethel Starbuck

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COLO. STATE DEPT. OF EDUCATION · DENVER
BYRON W. HANSFORD
COMMISSIONER

THE WESTERN STATES SMALL SCHOOLS PROJECT

The Western States Small Schools Project, partly financed by a grant from the Ford Foundation, is designed to help the state education agencies in Colorado, Arizona, Nevada, New Mexico, and Utah in their efforts to improve instruction in the necessarily existent small schools. The Project began January, 1961 and will end August, 1965. Policy Board of the Project is composed of the chief state school officers of the cooperating states. Ralph G. Bohrson, Coordinator of the WSSSP, is headquartered in Denver, at the Colorado State Department of Education.

The Colorado portion of the Project, involving more than two hundred teachers and administrators in approximately thirty schools has been working in the following areas:

-- Ungraded or Continuous Progress Programs

-- Use of Self-Instructional Materials

-- Teacher Education and In-Service Programs

-- Institutes for Rural School Board Members

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SELF EVALUATION IN TYPEWRITING IN A MULTIPLE CLASS SITUATION PROVIDING INDIVIDUALIZED INSTRUCTION

Mrs. Joan Fedel
Ridgway High School
Ridgway, Colorado

1963-64

COMMUNITY

Ridgway is a very small community located on the Western Slope of Colorado in a valley surrounded by rugged mountains. The main industry is ranching, but some of the men work in the mines and others are engaged in the lumber industry. It is the end-of-the-line for the railroad, and the businesses are supported by the tourist trade as well as the local people. It is the center of an extensive hunting district and is buzzing with activity during the big game season.

SCHOOL

The school is very small and the students are transported from about a nine-mile radius. The average enrollment for the upper four grades is between thirty-five and forty; however, we operate on a six-six basis so our high school also includes the seventh and eighth grades, making a total enrollment of about sixty. There are six classroom teachers handling the upper six grades under the direct supervision of the school superintendent.

NEED

In order to improve the quality of instruction; to provide for individual differences; to eliminate curriculum restrictions; and to make use of limited facilities and personnel; this project was developed. I believe it more adequately meets the needs of the individual learner through the adaptation of the text material to individual progress, as well as provides an opportunity for a student to check his individual progress and quality of work.

Originally, it seemed necessary to teach all the typing classes during one period to facilitate scheduling for the students and for myself. That is still an important reason for my project; however, I believe the most important phase is individualizing instruction. It allows the able and ambitious students to take supplementary courses after completing the required typing course or to start on

the Typing II course, thus allowing a student to continue increasing his knowledge and skill. The slow student does not have to try to keep up and can take the time he needs to learn the subject matter and acquire the necessary skill. Since we are not a continuous progress school, we do have minimum standards and time limitations; however, we have a great deal more flexibility than in most conventional schools.

A project similar to this one would seem to be one of the first steps for a teacher to take when preparing for the change-over to a continuous progress curriculum. This type of individualized instruction would not necessarily have to apply to the small school nor to the multiple class situation, but would be applicable to any size class and all different levels of ability.

Try it! After you're over the first hump, which takes a lot of hard work and planning, you'll find you have more TIME TO TEACH!

RESEARCH AND DEVELOPMENT

I have studied the Business Education Concepts and Number Sequence of the Middletown Project[1] and the presentation of Dr. Rollins[2] at the Vail Workshop and feel many of the concepts of the ungraded high school apply to my situation.

My project is based on the need to individualize typing instruction, and there are numerous projects which seem to prove that individualized instruction is effective. The authors of both Gregg Typing[3] and the 20th Century Typewriting[4] stress their success in providing for individual differences through varied amounts of material and optional lessons. Neither text is written for continuous progress. From discussions with other project business teachers, many of us are individualizing instruction, and there should be additional research information available in the near future.

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1. Middletown Project, Middletown, Rhode Island, a nongraded secondary school.
2. Dr. Sidney Rollins, Rhode Island College, "Ungraded High Schools"
3. John L. Rowe, Alan C. Lloyd, Fred E. Winger, Gregg Typing, 191 Series (Gregg Pub. Co., 1962)
4. D.D. Lessenberry, T.J. Crawford, L.W. Erickson, 20th Century Typewriting, 7th Edit. (Southwestern Pub. Co., 1957)

My project activities first started with the Rocky Mountain Area Project in 1960. I believe it is pertinent to this documentation that you understand a few of the problems encountered during the four years of experimenting in this field and my further plans for developing a sound and reliable study.

During the 1960-61 school year my project was "Teaching Multiple Classes", namely, that of combining Typing I and II as well as combining Typing I with other classes. At the conclusion of that year I wrote an article for the Rural Education Committee which was published in "The Colorado School Journal", December, 1961. During that year I first introduced into my classes the tape recorder for providing instruction to one group leaving me free to assist the others. I also used numerous motivating devices, the magnetic board for displays, and special room arrangements allowing for grouping.

In 1961-62, I rearranged my Typing II class and included six separate units--one of which was a resource unit. This added a more practical application of typing and met with a great deal of approval from the students as well as the community. Their publication of the "History of Ridgway" was in great demand. I used a few typing films and introduced the use of rhythm records to improve typing ability and interest.

In 1962-63, I found that I was combining into one class students with no previous typing experience, ones who had had a short eighth grade typing course, and those who were ready to start Typing II. This presented a further problem of grouping and individualizing. I divided the class into three separate groups, but within those groups I still felt it was necessary to keep at approximately the same place. I incorporated all the helpful methods gathered from previous experiments, namely the use of the tape recorder, films, rhythm records, bulletin board and magnetic board displays, motivating devices, and the individual units which

provided Typing II students with a course more related to an Office Practice course rather than Typing II.

Still not satisfied, I started working on my 1963 proposal. I am very grateful to the Project personnel for allowing me to continue in the same area. Through their guidance, the workshop consultants, the introduction of programed materials, and years of planning, I finally found something I feel really works.

PROCEDURE

Grouping. When the first class arrived, I determined the four main groups: those who had had Junior High Typing and were able to type 20 words a minute or more with accuracy (the Junior High Typing was a short course taught to some of the eighth grade students during the last period study hall. It met about twice a week); those who had had Junior High Typing but had poor accuracy or were unable to type 20 words a minute and could profit by taking some remedial work; those with no previous typing experience; and those taking the Typing II course. After determining the grouping of the students, I explained the general procedure. The beginning students stayed together for the presentation of the keyboard; then they proceeded at their individual rates through the rest of the course. The ones who were unable to type with a fair degree of accuracy and speed, even though they took the Junior High Typing, were also started at the beginning and really welcomed the opportunity to reconstruct their typing skills. The other Typing I students reviewed the work taking approximately two lessons a period for the first two weeks before individualizing. The Typing II class stayed together for the first week or so in order to reconstruct their typing skill and then they were allowed to proceed individually.

Instruction Sheets. The first printed instructions given the students explained the general outline of the course and the procedure to be followed. Along with that the student received an explanation of the grading plan and the first unit

instruction sheet. As each unit was completed, the instruction sheet, with the unit typing attached, was placed in a wire basket on my desk for grading. The student then selected the next unit from his folder in the open-topped file and proceeded immediately with his work. If the next page in his folder indicated that he should take a test before proceeding, he then called it to my attention; and I supervised the general knowledge test, production test, and the timings very carefully.

Considerable time went into the preparation of the seventy-two instruction sheets necessary to cover the Typing I and II material. The sheets were devised to allow the student to know the goals for that part and occasionally to allow him to set his individual goal. Using the instruction sheets in connection with the text, each student was able to proceed through the unit (approximately a week to a unit) at his own rate. After completing the unit, the jobs were attached to the instruction sheet, and it was used as the cover page on which the student recorded the points received for each job and commented in regard to his problems or made suggestions for improving the instructions. The keys to the study guides were also on the instruction sheets to enable the student to check his guides as he completed them. The Typing II study guide keys were printed on the guides in programed form, but the Typing I keys were not available to the students.

As a student completed a job, he indicated on it the number of points earned and placed it beside his typewriter. If time permitted, I passed among the students and either changed the number of points or approved his by placing my initials on the paper. When the completed unit was handed in, I did not have to recheck any of the papers I had initialed and the grading was simplified.

I am revising the instruction sheets after rechecking and finding some of my errors, as well as asking the students for their comments in regard to the clarity of instructions, length of the units, and general opinion of the unit.

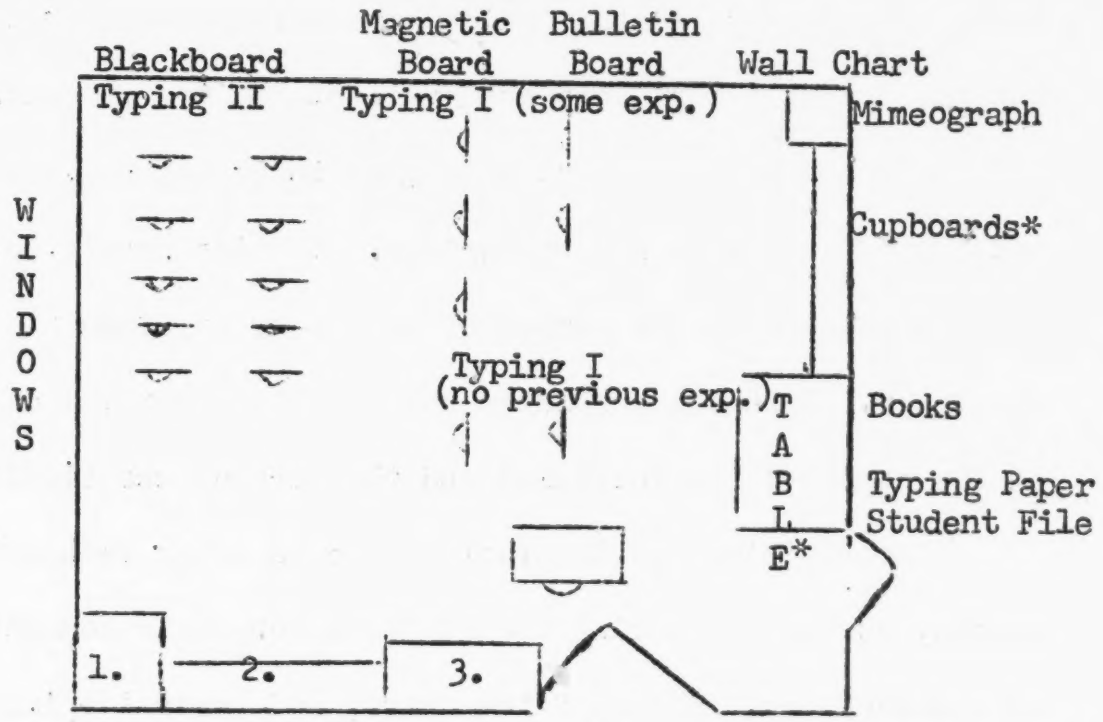
For both the Typing I and II classes I used the Gregg Typing text, 191 Series, and the instruction sheets were geared to that text. One might say it comes close to programing a textbook. As I continue to revise the instruction sheets, I believe the directions and progress can be continuous and self-explanatory.

A complete set of the instruction sheets is included with this documentation.

Room Arrangement. One thing I had learned from previous experiments was that the arrangement of the class was very important. In my 1963-64 class the ten Typing II students were arranged so that they were paired according to general progress and ability. There happened to be such a degree of difference among the seven Typing I students that pairing or grouping did not seem advisable. I did have this group facing a different direction so that I could speak to them without interrupting the other class. Those who had not had any previous typing were located close to my desk and to the equipment being used.

I might have used a different arrangement, but the typing room was used for several other classes and at the conclusion of each typing class the machines had to be moved from the desk and placed on the stands at the sides of the room. This is not a procedure I would recommend, but one that was necessary.

ROOM ARRANGEMENT



1. Adding Machine
2. Cupboards*
3. Tape Recorder & Record Player

(*Typewriters placed here when not in use)

Timings. Those of you who are familiar with the teaching of typing or who have ever taken the course, realize that there was always a certain amount of waiting before all students were ready for a timed writing. Frankly, it was the fear of having one student ready for a one-minute timing, another needing a two-minute, five-minute, ten-minute, or even a thirty-minute production timing that made me reluctant to let the students proceed individually.

Last year I used the tape recorder for continuous timings. I recorded a tape on which I gave a starting signal, "ready" and then indicated each minute for an hour. For example with this tape a student taking a two-minute timing could start on "three" and stop typing on the word "five". I realized the students were really using the tape for their timings, for when I would happen to forget to start it, one of them would remind me immediately to turn on the recorder.

At our workshop in Vail, Dr. Lincoln Hanson, one of our consultants from the Center for Programed Instruction, suggested a simple electronic device that could be used for such timings which would have a different sounding signal every five minutes to facilitate the five-minute timed writings and a buzzing sound as a preparation signal. Because the students were responsible for starting and stopping at exactly the right time, I used the End-of-the-Part Tests to verify their timings. If there was too much discrepancy, I would administer several more timings to double check the accuracy of their timings. Of all the innovations I have had, this is the one that freed me from being a clock watcher. Now I feel I can be more of a "typist watcher".

Rhythm Records. Occasionally all students would take a break from the rigid schedule and relax with some music. I used the rhythm records[1] when the students were so engrossed in other activities that typing the regular jobs would be rather ineffective or when there were interruptions in the regular class routine. There were not many opportunities to use the records, but they were really appreciated

1. Typewriting Rhythm Records, Accelerated Speed Series (Gregg Pub. Div., McGraw-Hill Book Co. Inc.)

when we did use them. I believe they have a definite place in improving speed through rhythm.

Additional Units. For the student who completed the Typing I course in less than a year, I prepared special units on Alphabetic Indexing, Ten-Key Adding Machine, Mimeograph and Mimeoscope, and the Duplicator. The student could select one of these units or start the Typing II course.

Summary of Procedure. Timed writings were continuous and administered wholly by the students by using the continuous taped timings as well as the regular typing timer for the longer writings.

The instruction sheets provided additional information and enabled the student to continue from one unit to the next without interruption.

Grading was simplified by the students' recording the points earned on each job.

Students were encouraged to determine their own speed and accuracy goals.

The room was arranged as efficiently as facilities permitted.

Each student was allowed to progress at his own rate and to take additional units at the end of the Typing I course if time permitted.

All these changes gave me more time to assist students with individual problems, to check the work as it was typed and to correct technique faults immediately.

EVALUATION

Grading still presents one of my major problems. We are not a continuous progress school and, therefore, must require a specific amount of work in a definite time in order to receive credit in a course. The grading plan I have been using looks rather complicated, but it seems to be working all right. It establishes a point system for the quality of the work based on different quantities. There are four schedules: premium, regular, nominal, and failing. The highest number of points is given for a quality grade of "A" in the premium course, fewer points for

an "A" in the regular course, etc. The failing course indicates not sufficient work being done for that grading period.

The suggested speed grade which applies to either straight timed writings or production copy as set up by the authors of our text is used to determine the grade to be given on the timings.

The End-of-Part-Tests (3 units) test general knowledge, production, and straight-copy speed and accuracy.

A copy of the grading plan may be found with the instruction sheets.

IMPROVEMENT

Last year when I was working out the seventy-two instruction sheets and making numerous changes in them before I felt they could be presented to the students, I was wondering if the old method would not be better--that of requiring every student to be on the same lesson. Once I let the students get started on an individual basis, there was no turning back or chance to pull them together. One very ambitious student was so enthused about the plan that she leaped way out in front of the rest and stayed there. Actually it was the thought of having her in the Typing I class that prompted me to work on this plan of individualizing. I also thought when I launched this project that I would have very small classes and that would be the year to get started. Eighteen is still a small class, but not when you want to get so much other work accomplished. This year my typing classes are small, so I am taking this opportunity to re-evaluate the instruction sheets, to spend some time equalizing the length of the units and to change some of the directions.

The students seemed to like individual progress. At the conclusion of the course, not one student felt he would rather have been taught by the old lock-step method but seemed to appreciate the freedom of progress.

My job is more interesting. I can spend much more time teaching since I'm not always starting timed writings. Students seem to be more industrious and all of the classroom activities are continuous and uninterrupted.

RESULTS

Production typing seems to be more important than straight-copy timed writings, but the timed writings are a more definite measurement so I used them in comparing students and classes.

In Typing I, I have been giving pre-tests and final tests for the past two years. In order to establish a speed grade, three tests must be submitted at any one speed. The error cut-off for the Typing I pre-test was 5 errors and for the final test 3. For Typing II the pre-test error cut-off was 3 and the final test cut-off was 1. The error cut-off is the number of errors allowed, and all words typed up to the next error beyond the allowable errors cannot be counted when figuring the speed.

The timed writings were based on either straight-copy or production work since in the Gregg text there is a word allowance for difficult production work so that it can be evaluated the same as straight copy.

The chart on the following page indicates the actual results obtained from three years of testing. Only in the last two years did I start giving the pre-test, but before that none of the Typing I students would have had any previous typing. The 1960-61 results as shown on the following "Analysis of Statistics" charts were kept only as averages and, therefore, they do not appear on the first "Statistics" chart. On the two pages indicated as "Analysis of Statistics", I have averaged some of the results in order to make comparisons. There is a separate analysis for Typing I and II. I have attempted to interpret some of the findings and to give you some possible reasons not reflected in the statistics.

STATISTICS

STUDENT	SEX	I.Q.	GRADE LEVEL	1961 - 1962 TYPING I Beginning Speed	1961 - 1962 TYPING I Ending Speed	1961 - 1962 TYPING II Beginning Speed	1961 - 1962 TYPING II End. Speed	1962 - 1963 TYPING I Beg. Speed	1962 - 1963 TYPING I End. Speed	1962 - 1963 TYPING II Beg. Speed	1962 - 1963 TYPING II End. Speed	1963- 1964 TYPING I Beg. Speed	1963- 1964 TYPING I End. Speed	1963- 1964 TYPING II Beg. Speed	1963- 1964 TYPING II End. Speed
1	M	122	12	0	50										
2	M	100	10	0	36	. . .	. . .	. . .	. .	--	41				
3	F	99	10	0	37	. . .	. . .	. . .	. .	--	43				
4	F	115	10	0	38										
5	F	115	10	0	35	. . .	. . .	. . .	. .	--	47				
6	M	104	10	0	42	. . .	. . .	. . .	. .	. . .	. . .	. . .	. .	24	51
7	F	98	10	0	31	. . .	. . .	. . .	. .	. . .	. . .	. . .	. .	20	43
8	M	117	12	0	36										
9	M	109	10	0	31	. . .	. . .	. . .	. .	--	46				
10	F	102	12	. .	. .	--	51								
11	M	117	11	. .	. .	--	59								
12	F	106	12	. .	. .	--	50								
13	F	96	12	. .	. .	--	49								
14	M	104	11	. .	. .	. . .	. . .	0	40	. . .	. . .	. . .	. .	32	64
15	F	95	10	. .	. .	. . .	. . .	20	38	. . .	. . .	. . .	. .	28	53
16	F	102	10	. .	. .	. . .	. . .	22	44	. . .	. . .	. . .	. .	36	55
17	F	91	10	. .	. .	. . .	. . .	0	30	. . .	. . .	. . .	. .	20	44
18	M	101	11	. .	. .	. . .	. . .	0	31	. . .	. . .	. . .	. .	26	45
19	F	106	10	. .	. .	. . .	. . .	26	49	. . .	. . .	. . .	. .	38	55
20	F	119	10	. .	. .	. . .	. . .	24	47	. . .	. . .	. . .	. .	42	53
21	F	98	10	. .	. .	. . .	. . .	20	45						
22	M	99	11	. .	. .	. . .	. . .	0	32						
23	M	103	11	. .	. .	. . .	. . .	0	31						
24	M	103	10	. .	. .	. . .	. . .	17	37						
25	M	90	11	. .	. .	. . .	. . .	0	34						
26	M	120	11	. .	. .	. . .	. . .	0	45						
27	M	95	10	. .	. .	. . .	. . .	0	30						
28	M	94	11	. .	. .	. . .	. . .	0	35						
29	F	109	11	. .	. .	. . .	. . .	. . .	. .	. . .	. . .	0	31		
31	M	111	10	. .	. .	. . .	. . .	. . .	. .	. . .	. . .	30	47		
32	F	103	10	. .	. .	. . .	. . .	. . .	. .	. . .	. . .	33	50		
33	F	112	10	. .	. .	. . .	. . .	. . .	. .	. . .	. . .	34	68		
34	M	104	10	. .	. .	. . .	. . .	. . .	. .	. . .	. . .	30	53		
35	F	113	10	. .	. .	. . .	. . .	. . .	. .	. . .	. . .	44	56		
38	F	--	12	. .	. .	. . .	. . .	. . .	. .	. . .	. . .	. .	. .	35	49

ANALYSIS OF STATISTICS

TYPING I

	1960-1961	1961-1962	1962-1963	1963-1964	TOTALS
Number Tested	12	9	15	6	42
Average I.Q.	104	109	101	109	106
Average Speed	44	37	38	51	43
Highest Speed	50	50	49	68	68
Lowest Speed	34	31	30	31	30
Number with Jr. High Typing	0	0	6	5	11
Average Pre-test Score	--	--	22	34	28
Average Ending Speed of Those with Jr. High Typing	--	--	43	55	49
Average Ending Speed of Those Without Jr. High Typing	44	37	34	31	37

	BOYS	GIRLS	BOYS	GIRLS	BOYS	GIRLS	BOYS	GIRLS	TOTALS BOYS	TOTALS GIRLS
Number	8	4	5	4	9	6	2	4	24	18
Average I.Q.	--	--	110	107	101	102	108	109	106	106
Average Speed			39	35	35	42	50	51	41	43
Highest Speed			50	38	45	49	53	68	53	68
Lowest Speed			31	31	30	30	47	31	30	30

ANALYSIS OF STATISTICS

TYPING II

	1960-1961	1961-1962	1962-1963	1963-1964	TOTALS
Number Tested	5	4	4	10	23
Average I.Q.	97	105	106	102	103
Average Speed	52	52	44	51	50
Highest Speed	--	59	47	64	64
Lowest Speed	--	49	41	43	41
Average Speed--End of Typing I Course	--	--	35	39	37
Average Pre-test Speed	--	--	--	30	30
Average Speed of those with Jr. High Typing	--	--	--	54	54
Average Speed without Jr. High Typing	52	52	44	49	49

	BOYS	GIRLS	BOYS	GIRLS	BOYS	GIRLS	BOYS	GIRLS	BOYS	GIRLS
Number	3	2	1	3	2	2	3	7	9	14
Average I.Q.			117	101	105	107	103	102	108	103
Average Speed			59	50	44	45	53	50	51	48
Highest Speed			59	51	46	47	64	55	64	55
Lowest Speed				49	41	43	45	43	41	43

INTERPRETATION OF STATISTICS

RESULTS	POSSIBLE REASONS
The 1963-64 Typing I class excelled in achievement over all others tested.	This class has been outstanding all through the years. They received the completely individualized instruction about which I am very enthusiastic.
The highest speed was attained from a member of the Typing I class 1963-64.	This was an outstanding student and individual progress allowed her to proceed and not become bored by a pace that was too slow.
The students who had had the Junior High Typing outscored the others turning in an average speed of 49 words as compared with 37 for the others.	It seems there might be a definite value in teaching the keyboard to the Junior High students.
According to the statistics, sex does not seem to have any special relationship to excellence or failure in typing.	Contrary to my general opinion, the boys do have a very slight edge.
The 1962-63 Typing II class was much lower than the others in average speed.	The main emphasis was on the Office Practice units rather than on the typing units.
In Typing II the students who had had Junior High typing reached 54 words a minute as compared with 49 words for the others.	
From the statistics there is no direct relationship between typing speed and I.Q.	Too close to an average group without the very high or low students for comparison purposes.

FUTURE RESEARCH

This year I plan to use the Gregg Typing Records[1] to present the keyboard to new students and facilitate the review for students needing extensive reviewing. I have been using the records for a few days now, and I think the repetition of each letter and line with the tempo of the music being increased is excellent. For those students with a real sense of rhythm, it seems to be very stimulating. I believe I will have more opportunity to observe the individual faults of students, and I hope to be able to correct them quickly to avoid the formation of wrong techniques. So far the learning has been fun, and I am particularly enthused about the new method of presentation. The Typing I students who are already familiar with the keyboard are going through the records quickly as a matter of review.

I still have a lot of work to do on my present project, and I will be continuing my research.

Actually what I have in mind right now, even though it is not a part of the proposal I submitted, is to ungrade the business curriculum. One of our Vail workshop consultants, Dr. Rollins, did not encourage me to attempt such a project, but I'm not sure I made it clear to him that I generally handle all the business curriculum. I'm not sure how I will proceed, but I believe the work I have done so far is a step toward that goal.

The carry-over value of a project such as this reflects in many other areas. For example, I now have my entire bookkeeping class progressing at individual rates and find it is working out satisfactorily. The study guide tests and the unit tests, as well as the projects and practice sets, will serve as definite measurements and will assist me in determining individual difficulities or misunderstandings as well as providing a method of evaluation.

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1. Gregg Typing Records, Keyboard Drills and Exercises (Gregg Publishing Div., McGraw Hill Book Co., Inc.)

In order to provide a more adequate training for the students who do intend to follow up with their secretarial work, we added to our curriculum an extra course for the shorthand students who had had the first year of shorthand in their junior year but would not have any follow-up course in their senior year. The lack of a follow-up course was due in part to the heavy load already required of this group. The mathematics teacher, who is also qualified to teach commercial subjects, taught the Shorthand I course last year. This year she gives dictation to the girls interested in secretarial work twice a week at which time we exchange classes, and I teach the eighth grade typing. The other three days the secretarial girls report to the commercial room and work on the school annual, the newspaper, or take dictation or office instruction. All news items collected for the newspaper must be taken down in shorthand which provides additional dictation. We hope that this course will enable these girls to retain and improve their shorthand and typing speed and better prepare them for the future.

AN INVESTIGATION TO DETERMINE IF HIGHER SPEEDS ARE OBTAINED WITH THE DIAMOND JUBILEE GREGG SHORTHAND METHOD

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Meeker, Colorado 1964-65

This was a study to determine whether higher shorthand speeds are achieved by the students in the one-year shorthand course at Meeker High School through the use of Simplified Gregg Shorthand or through the use of Diamond Jubilee Gregg Shorthand.

The investigation was concerned with the following questions:

1. What per cent of the Meeker High School one-year Simplified Gregg Shorthand students of the years 1957-63 qualified on the 60 words a minute, five-minute Gregg Awards Tests with an accuracy of at least 95 per cent?

2. How early in the year did these students qualify?

3. What per cent of the Meeker High School one-year Diamond Jubilee Gregg Shorthand students of the years 1963-64 and 1964-65 qualified on the 60 words a minute, five-minute Gregg Awards Tests with an accuracy of at least 95 per cent?

4. How early in the year did these students qualify?

The investigation was conducted as follows: The Control Group was taught Simplified Shorthand and given the Gregg Awards Test each month from January through May. These tests were checked, and the names of those students whose papers qualified with an accuracy of 95 per cent or better were recorded. The Experimental Group was taught Diamond Jubilee Shorthand and given the Gregg Awards Test each month from January through May. These tests were checked, and the names of those students whose papers qualified with an accuracy of 95 per cent or better were also recorded. From this data, the per cent of students qualifying with Simplified Shorthand and the per cent of students qualifying with Diamond Jubilee Shorthand was determined.

It was assumed that the only difference between the control situation and the experimental situation was the revision of the shorthand system. The similarity of the learning situations was established by delineating the likenesses:

1. Same school: Meeker High School
2. Same teacher: Ethel Stone Starbuck
3. Same classroom: Room 112
4. Same class period: 35-minute class; 20-minute study
5. Same testing program: Gregg Awards Testing Program

The degree of similarity between the students of the Control Group and the students of the Experimental Group was established by determining the mean, the median, and the standard deviation of the Control Group and the Experimental Group in relation to the I.Q., Freshman and Sophomore Grade Average, and Freshman and Sophomore English Grade Average. The data thus collected were tested by applying the null hypothesis. The .05 level of confidence was established at 1.98, with 118 degrees of freedom.

A statistical summary of the data collected revealed the following facts about the Lorge-Thorndike Intelligence Quotients of the Simplified Gregg Shorthand Control Group: the mean was found to be 110.28; the median, 112.00; and the standard deviation, 11.92. The Diamond Jubilee Gregg Shorthand Experimental Group was found to have a mean of 107.73, a median of 106.00, and a standard deviation of 10.62. Table 1, which follows, shows the difference, the standard error of the difference of the statistics, the critical ratio, and the significance of the difference between the two groups.

TABLE 1

COMPARISON OF LORGE-THORNDIKE INTELLIGENCE QUOTIENTS OF SIMPLIFIED SHORTHAND STUDENTS AND DIAMOND JUBILEE SHORTHAND STUDENTS

Measure	Simplified Shorthand (N = 75)	DJS (N = 45)	Difference	Standard Error of Difference	Critical Ratio	Significance of Difference
Mean	110.28	107.73	2.55	.28	8.98	Significant
Median	112.00	106.00	6.00	2.63	2.28	Significant
Standard Deviation	11.92	10.62	1.30	1.49	.87	Not Significant

The critical ratios of the mean and of the median are clearly significant at the .05 level of confidence. Therefore, it was determined that the Diamond Jubilee Shorthand Group was significantly lower than the Simplified Shorthand Group, as measured by the Lorge-Thorndike Intelligence Tests.

The data relative to the Freshman and Sophomore Grade Averages* of the Simplified Gregg Shorthand Control Group were found to be as follows: mean, 2.83; median, 2.83; and standard deviation, .62. The Freshman and Sophomore Grade Averages of the Diamond Jubilee Gregg Shorthand Experimental Group showed a mean of 2.60, a median of 2.45, and a standard deviation of .70. Table 2 shows a statistical comparison of the two groups.

TABLE 2

COMPARISON OF FRESHMAN AND SOPHOMORE GRADE AVERAGES OF SIMPLIFIED SHORTHAND STUDENTS AND DIAMOND JUBILEE SHORTHAND STUDENTS

Measure	Simplified Shorthand (N = 75)	DJS (N = 45)	Difference	Standard Error of Difference	Critical Ratio	Significance of Difference
Mean	2.83	2.60	.23	.02	13.24	Significant
Median	2.83	2.45	.38	.16	2.42	Significant
Standard Deviation	.62	.70	.08	.09	.89	Not Significant

Here, too, the critical ratios of the mean and of the median are clearly significant at the .05 level. Therefore, it was evident that the Diamond Jubilee Shorthand Group was significantly lower than the Simplified Shorthand Group, as measured by their Freshman and Sophomore Grade Averages.

*The numerical equivalents of the grading scale were: 4, an "A"; 3, a "B"; 2, a "C"; and 1, a "D."

The Freshman and Sophomore English Grade Averages of the Simplified Gregg Shorthand Control Group showed a mean of 2.92, a median of 3.00, and a standard deviation of .76. The Diamond Jubilee Group had a mean of 2.55, a median of 2.33, and a standard deviation of .86. Table 3 presents the statistical comparison of the English Grade Averages of the two groups.

TABLE 3

COMPARISON OF FRESHMAN AND SOPHOMORE ENGLISH GRADE AVERAGES OF SIMPLIFIED SHORTHAND STUDENTS AND DIAMOND JUBILEE SHORTHAND STUDENTS

Measure	Simplified Shorthand (N = 75)	DJS (N = 45)	Difference	Standard Error of Difference	Critical Ratio	Significance of Difference
Mean	2.92	2.55	.37	.02	16.87	Significant
Median	3.00	2.33	.67	.20	3.42	Significant
Standard Deviation	.76	.86	.10	.13	.79	Not Significant

Again, the critical ratios of the mean and of the median are clearly significant at the .05 level. Therefore, it was evident that the Diamond Jubilee Shorthand Group was significantly lower than the Simplified Shorthand Group, as measured by their Freshman and Sophomore English Grade Averages.

Since there were 75 shorthand students included in the Control Group and 45 shorthand students included in the Experimental Group, the number of students in each group qualifying at a speed of 60 wam was expressed in terms of the per cent of those who qualified in each group.

Table 4 presents the percentage comparisons in a cumulative form.

TABLE 4

CUMULATIVE COMPARISON OF SHORTHAND ACHIEVEMENT OF STUDENTS OF SIMPLIFIED SHORTHAND WITH STUDENTS OF DIAMOND JUBILEE SHORTHAND

Month	Cumulative % Qualified by Month Stated Using Simplified (N = 75)	Cumulative % Qualified by Month Stated Using DJS (N = 45)	Difference	Standard Error of Difference	Critical Ratio	Significance of Difference
January	2.67	11.11	8.44	5.04	1.68	Not Significant
February	9.33	17.78	8.45	6.60	1.28	Not Significant
March	14.67	33.33	18.66	8.25	2.26	Significant
April	32.00	42.22	10.22	9.12	1.12	Not Significant
May	49.33	62.22	12.89	9.24	1.39	Not Significant

The Diamond Jubilee Experimental Group showed a higher cumulative percentage of achievement throughout the entire testing period. The difference was statistically significant, however, only by the end of March, at which time the critical ratio was clearly significant at the .05 level.

The following measurements of the two groups were found to be of special significance:

The Experimental Group, which studied Diamond Jubilee Gregg Shorthand, was a significantly less capable group than the Control Group, which studied Simplified Gregg Shorthand, in the areas which show a positive group correlation with shorthand success; namely, general intelligence, grade average, and English grade average.

The following conclusion was, therefore, reached by the investigator:

Since the less gifted Diamond Jubilee Shorthand Group performed as well as the more gifted Simplified Shorthand Group, it may be concluded that an inferior group using Diamond Jubilee Shorthand will perform as well as a superior group using Simplified Shorthand. The groups referred to, in this instance, would be restricted to average junior and senior high school level students.

The observations of the writer would suggest the following hypotheses for further investigation:

1. The learning load of Simplified Gregg Shorthand has been effectively reduced in the Diamond Jubilee Shorthand Revision.

2. Because of this reduced learning load, the theory can be mastered in shorter time. For this reason, new-matter dictation can be given much earlier in the year and successfully taken and transcribed by the student.

3. More students can expect to achieve a useful shorthand skill in a shorter time. Many of the more apt students can gain a useful shorthand skill in less than a year. It is still not indicated, however, that the below-average student should be encouraged to enroll in shorthand with the anticipation of achieving a usable skill in one year.

4. It may reasonably be proposed that groups of similar ability will perform better with Diamond Jubilee Shorthand than with Simplified Shorthand the first year.